

Work Order ID 78469

January-10-12 9:50:26 AM

78469

Page 1

Item ID: D206-667-207BL

Accept

N9000040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Crosstube Mid Aft

Start Date: 10/01/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: M.L.J.

Date: 12/01/10

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D206-667-247

A (DEO)

IIN-D206-667

D

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D206-667-207 chg 002

5 12/02/13

for M.L.J. 12-2-13

110

0.00

110

BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D206-667-247 using CNC bender program D206-667-207

JW / MO 12-1-30

PK →



| W/O: 78469 | | WORK ORDER CHANGES | | | | | |
|------------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: D206-667-207BL PAR #: _____ Fault Category: X-tube NCR: Yes ☒ No ☐ DQA: [Signature] Date: 12/2/17
 Resolution: use as is Disposition: use as is QA: N/C Closed: [Signature] Date: 12/2/17

| NCR: 12-1211 | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|--------------|------|---|---|-------------------------------------|-------------------------------|-------------------------------|---|-------------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| 12.02.01 | 110 | Tube crushing after bending 15 ± 7% at end of band near cuff. | <u>GP</u> 12.02.01 <u>QPS/642</u> | Acceptable based on attached STR | <u>[Signature]</u> 12/1/17 | <u>[Signature]</u> 12/1/17 | <u>GP</u> 12.02.01 <u>QPS/642</u> | <u>[Signature]</u> 12/1/17 |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Work Order ID 78469***78469***

Page 2

January-10-12 9:50:26 AM

Item ID: D206-667-207BL

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Mid Aft

Start Date: 10/01/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

120

QC15- Crosstube Dimensional Check

0.00

120

QC

Memo

0.00

Quality Control

Sizelofus

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Work Order ID 78469

78469

Page 3

January 10-12-09:50:26 AM

Item ID: D206-667-207BL

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Mid Aft

Start Date: 10/01/2012 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start ***NR1***

QC: Date: SPC (Y/N): Date:

Stop ***NR2***

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

130

130

Crosstubes

Crosstubes

Crosstubes

Memo

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 and drill table DT8577 and tower holes #6 as per QSI0010 and as per Dwg D206-667-247. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-247 Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT 8584 & DT8583 as per Dwg D206-667-247. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-247

6-Drill Fwd rivet holes using drill Jig DT8787 as per Dwg D206-667-147. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT 8787 as per Dwg D206-667-247.

8-C'sink holes as per Dwg D206-667-247.

9 -Scribe part # and batch # using vibrating stylus as per Dwg D206-667-247 Inside of Cuff(Donot engrave on outside of tube)

10 -Deburr & Inspect for surface damage. Repair damage within limits as per

MO

12/1/30

MO/RM

12/1/31

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Work Order ID 78469

January-10-12 9:50:26 AM

78469

Page 4.

Item ID: D206-667-207BL

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Mid Aft

Start Date: 10/01/2012 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

Dwg
D206-667-247

140

Crosstubes Chemical Conversion

0.00

140

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

MO/RM

12/1/31

150

QC3- Inspect Part Finish

0.00

150

QC

Memo

0.00

Quality Control

Sizelock

160

QC5- Inspect part completeness to step on W/O

0.00

160

QC

Memo

0.00

Quality Control

Sizelock

POSITIVE RECALL
EFFECTIVE 12.01.30 AUTH *[Signature]*
RELEASED 12.02.01 DATE *[Signature]*

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Work Order ID 78469***78469***

Page 5

January-10-12 9:50:26 AM

Item ID: D206-667-207BL

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Mid Aft

Start Date: 10/01/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

170

Outsource process - NDT per QSI038 4.1

0.00

170

Outsource2

Memo

0.00

Outsource process - NDT

Liquid Penetrant Inspection as per QSI 038Or

Issue P/O: 16046

LPI as per ASTM 1417

Level 2 Attach copy of NDT results to work order

CL 12/01/31 (1)

180

Packaging

0.00

180

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

12/01/31 (1)

190

QC5- Inspect part completeness to step on W/O

0.00

190

QC

Memo

0.00

Quality Control

Ensure results are as per Dwg D206-667-247

5/2/06

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Work Order ID 78469

78469

Page 6

January-10-12 9:50:26 AM

Item ID: D206-667-207BL

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Mid Aft

Start Date: 10/01/2012 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

200

0.00

200

SprayPaint

0.00

SprayPaint

Memo

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 9:00

Finish Time: 10:00

PAINT:

Start Time: 2:15

Finish Time: 3:00

AS 12 - 2 - 7

210

QC14- Inspect Spray Paint

0.00

210

QC

Memo

0.00

Quality Control

Wrap in plastic bag to protect from scratches

W 12 02 08 (1)

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Page 7

①

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Work Order ID 78469***78469***

Page 8

January-10-12 9:50:26 AM

Item ID: D206-667-207BL

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Mid Aft

Start Date: 10/01/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

250

Pick Kit

0.00

250

Packaging

Memo

0.00

Packaging

1/14/13 (1)

260

QC4- 100% Inspect kits for completeness

0.00

260

QC

Memo

0.00

Quality Control

8/12/13

270

Packaging

0.00

270

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D206-667-207

Location:

PPP Rev: A

12/21/14

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Work Order ID 78469

78469

Page 9

January-10-12 9:50:26 AM

Item ID: D206-667-207BL

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Crosstube Mid Aft

Start Date: 10/01/2012 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start *NR1*

QC: Date: SPC (Y/N): Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan
Code

Accept Reject Reject Insp.
Qty Qty Number Stamp

280

QC21- Final Inspection - Work Order Release

0.00

280

QC

Memo

0.00

Quality Control

12/2/15

012-02-14

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Picklist Print

January-10-12 9:50:29 AM

Page 1

Work Order ID: 78469

78469

Parent Item: D206-667-207BL

***D206-667-207BL ***

Parent Item Name: Crosstube Mid Aft

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

Comments:

RevA 11.01.13 New Issue EC verified by:DD
11.08.08 PER ECN 11-615 DD VERF:EC

IPP REV:B

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Qty per Kit | Total Qty | Qty Issued | Date Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|

D206-667-247TRN

Manufactured

No

110

Each

2.0000

1

1

D206-667-247TRN

**

Crosstube Assembly, Mid Aft

Location

Loc Qty

Loc Code

LG 78671

2

69982

1

69983

1

①

mo 12/1/27

D2873-043

Manufactured

No

220

Each

34.0000

2

2

D2873-043

**

Nut Plate Assembly

AL 12-2-9

Location

Loc Qty

Loc Code

LG052

34

72644

2

73605

12

75010

20

2

D2873-045

Manufactured

No

220

Each

27.0000

2

2

D2873-045

**

Nut Plate Assembly

AL 12-2-9

Location

Loc Qty

Loc Code

LG052

27

73529

7

74985

20

2

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Picklist Print

January-10-12 9:50:29 AM

Work Order ID: 78469

78469

Parent Item: D206-667-207BL

***D206-667-207BL ***

Parent Item Name: Crosstube Mid Aft

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

MS20601-AD4W10

Purchased

No

220

Each

165.0000

14

14

MS20601-AD4W10

**

AL 12-2-9

RIVET

Location

Loc Qty

Loc Code

LG051

165

118675

65

119386

100

14

D2892-1

Manufactured

No

230

Each

18.0000

2

2

D2892-1

**

AL 12-2-9

Support

Location

Loc Qty

Loc Code

LG052

18

72483

14

72585

4

2

D3595-063-450

Manufactured

No

230

Each

74.1095

4

4

D3595-063-450

**

AL 12-2-9

RUBBER CUSHION

Location

Loc Qty

Loc Code

MAT052

74.109474

67353

2

68893

6

70113

0.56

71354

0.2

74113

0.349474

75597

65

4

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Picklist Print

January-10-12 9:50:29 AM

Page 3

Work Order ID: 78469

Parent Item: D206-667-207BL

Parent Item Name: Crosstube Mid Aft

78469

***D206-667-207RI ***

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

MS21920-22

Purchased

No

230

Each

76.0000

4

4

MS21920-22

Clamp(per MIL-DTL-8783C)

**

AS 12-2-9

Location

Loc Qty

Loc Code

LG

50

(119545)

50

4

LG050

26

116207

7

117506

1

118186

18

AN5-10A

Purchased

No

250

Each

634.0000

10

10

AN5-10A

Bolt

**

Location

Loc Qty

Loc Code

ST337

634

118191

80

119547

454

119981

100

119847

AN5-32A

Purchased

No

250

Each

215.0000

4

4

AN5-32A

Bolt

**

Location

Loc Qty

Loc Code

ST339

215

118422

2

118628

38

118983

25

119328

100

119862

50

118983

Dart Aerospace Ltd

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Picklist Print

January-10-12 9:50:29 AM

Page 4

Work Order ID: 78469

78469

Parent Item: D206-667-207BL

***D206-667-207BL ***

Parent Item Name: Crosstube Mid Aft

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

AN5-34A

Purchased

No

250

Each

64.0000

4 4

AN5-34A

Bolt

**

Location

Loc Qty

Loc Code

ST339

64

117794

34

119328

30

117799

AN960JD516

NAS1149D0563J

Purchased

No

250

Each

0.0000

18

18

AN960.ID516

Washer

**

118206 11x M19712 7x

MS21042L5

Purchased

No

250

Each

2,022.000

4

4

MS21042I 5

Nut

**

12/2/13 (1)

Location

Loc Qty

Loc Code

ST300

2022

116105

5

116548

43

117611

50

118179

424

119109

1500

118179

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

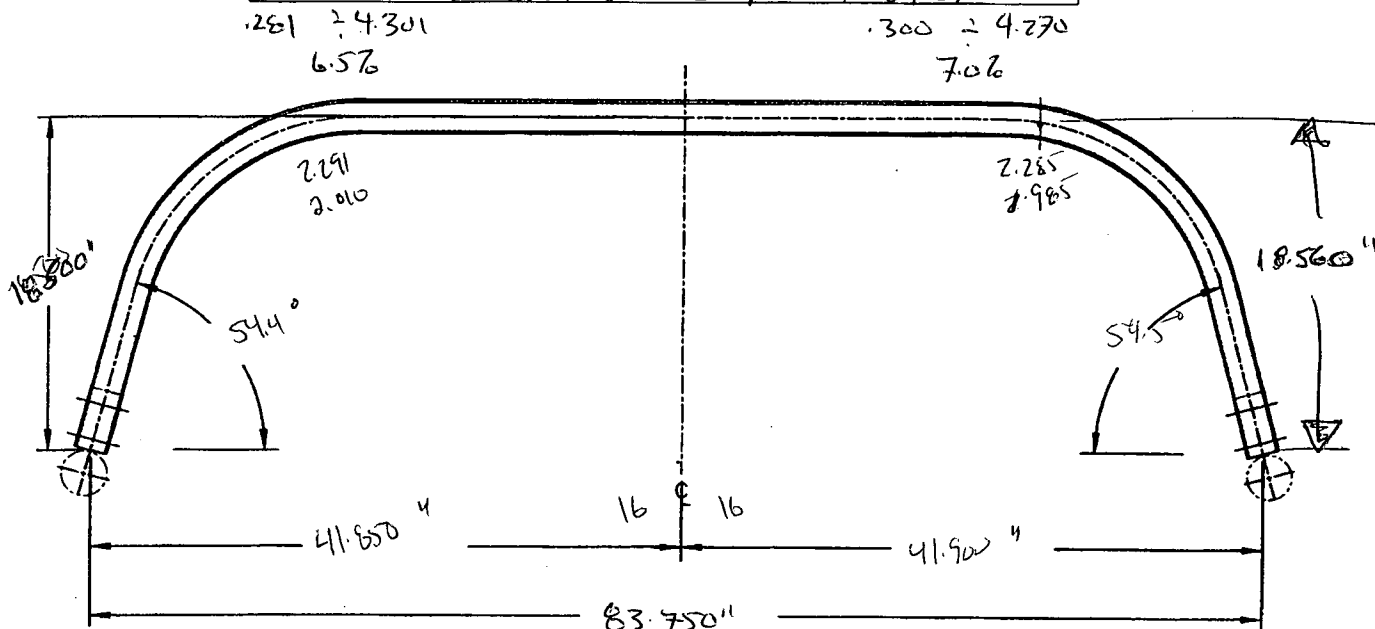
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

| | |
|---|------------------------------------|
| DART AEROSPACE LTD | Work Order: 78469 |
| Description: 206 L mid aft cross tube | Part Number: D206-667-201BL |
| Inspection Dwg: D206-667-247 Rev: A | Page 1 of 1 |

| Required Dimension | Min | Max |
|----------------------------|---------|---------|
| Height 18.47 $\pm .130$ | 18.340" | 18.600" |
| 1/2 Span 41.92 $\pm .130$ | 41.790" | 42.050" |
| Angle 54° ± 2 | 54° | 56° |
| Total Span 83.84 $\pm .25$ | 83.580" | 84.090" |



| Comments |
|--------------------------------------|
| Size A = 6.576 crushing @ 16 passes. |
| Size B = 7.076 crushing @ 16 passes. |

| | |
|-----------------|----------|
| QC15 Inspection | 8 |
| Date | 12/02/06 |

| Rev | Date | Change | Revised by | Approved |
|-----|----------|----------------------------|------------|----------|
| A | | New Issue | | |
| B | 06.09.19 | Reformat; QC level revised | KJ/JM | |
| C | 07.02.06 | Reformat | KJ/JM | |

Dart Aerospace Ltd

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

| Item | Qty | Part Number | Description |
|------|------|----------------|--|
| | -247 | | |
| 1 | X | D206-667-247 | CROSSTUBE ASSEMBLY (206L MID AFT) |
| 2 | 1 | D6004-115 | CROSSTUBE |
| 3 | 2 | D2873-043 | NUT PLATE |
| 4 | 2 | D2873-045 | NUT PLATE |
| 5 | 2 | D2892-1 | SUPPORT |
| 6 | 4 | D3595-063-450 | RUBBER CUSHION |
| 7 | 4 | MS21920-22 | CLAMP |
| 8 | 14 | MS20601AD4W10 | RIVET (OR NAS9302B-4-10) |
| 9 | A/R | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE) |

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6004-115
FINISHED LENGTH = 99.76±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER 'D206-667-247' AND BATCH NUMBER ON
INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
- 7) WEIGHT: 21.1 lbs (-807 = 17.7 lbs)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI
015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE
D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE
LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITH NOTICE
WORK ORDER
NO. 78469 M.C.J

12/01/10

DEO ATTACHED

BCW #11-615
11.07.28

UNDER REVIEW

RELEASED
2011-05-24

| | | | |
|------------|-------------|----|----------|
| A | NEW ISSUE | CP | 10.12.23 |
| REV | DESCRIPTION | BY | DATE |
| DESIGN | | | |
| DRAWN | | | |
| CHECKED | | | |
| MFG. APPR. | | | |
| APPROVED | | | |
| DE APPR. | | | |
| DATE | 10.12.23 | | |

| | |
|---|------------------------|
| DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| DRAWING NO. D206-667-247 | REV. A SHEET 1 OF 4 |
| TITLE CROSSTUBE ASS'Y (206L MID AFT) | SCALE NTS |
| COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD | |

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

8 7 6 5 4 3 2 1



EO ATTACHED

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

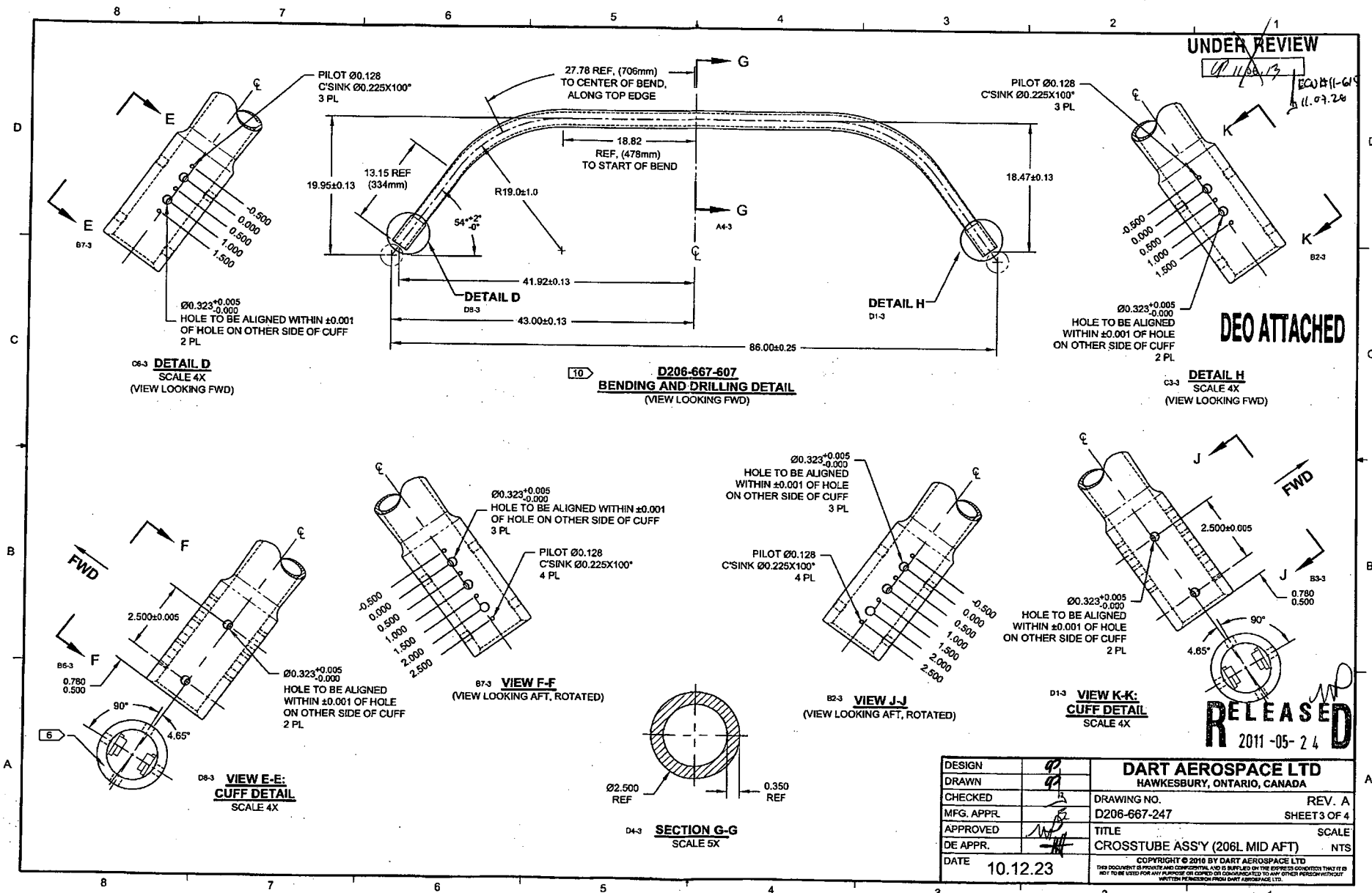
78469

UNDER REVIEW

ECW 11-1-64
11.07.28

DEO ATTACHED

RELEASED
2011-05-24



| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

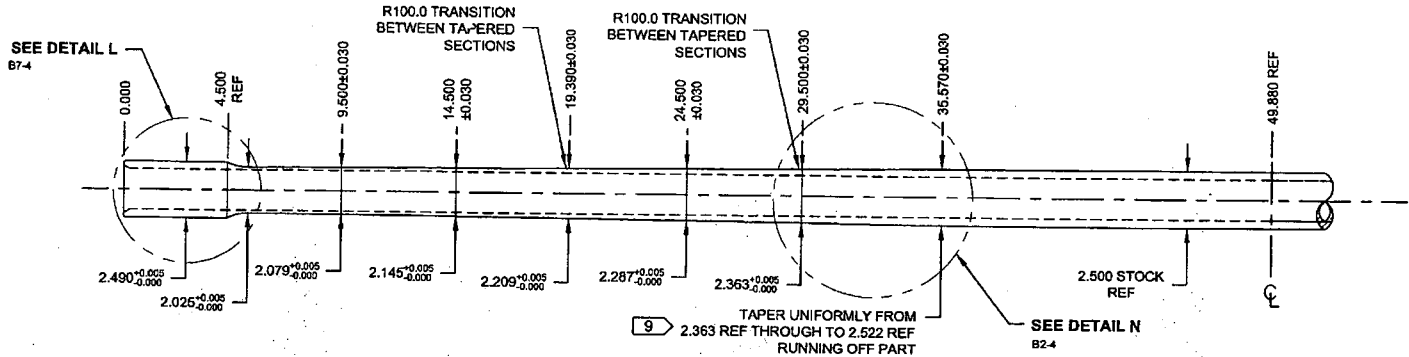
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

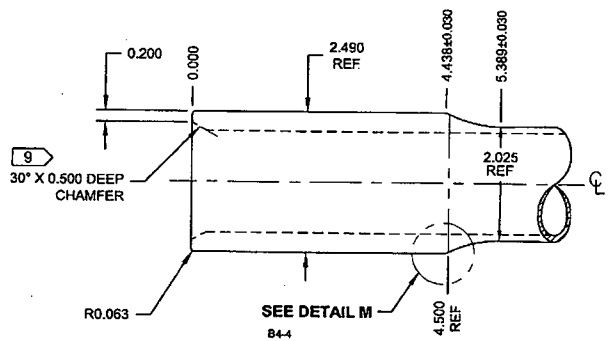
NOTE: Date & initial all entries

78469

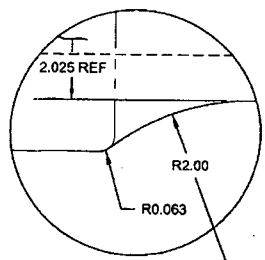
8 7 6 5 4 3 2 1



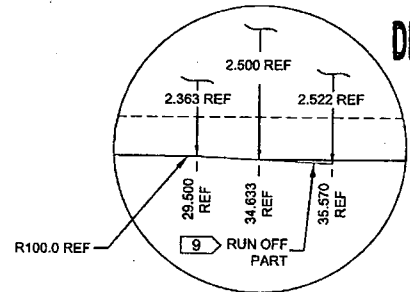
TURNING DETAIL



C74 DETAIL L: CROSSTUBE CUFF SCALE 2.5X



B64 DETAIL M: CUFF TRANSITION NOT TO SCALE



C44 DETAIL N: TAPER RUN-OFF NOT TO SCALE

ECN # 11-615
11.07.26
UNDER REVIEW
11.06.13

DEO ATTACHED

RELEASED
2011-05-24

| | | | |
|------------|----------|--|--------------|
| DESIGN | 9 | DART AEROSPACE LTD | |
| DRAWN | 9 | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | | DRAWING NO. | REV. A |
| MFG. APPR. | | D206-667-247 | SHEET 4 OF 4 |
| APPROVED | | TITLE | SCALE |
| DE APPR. | | CROSSTUBE ASSY (206L MID AFT) | NTS |
| DATE | 10.12.23 | COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. | |

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

70469

| | | | | | | | |
|-----------------------------|---|------------------|---|--|--------------------------------|---------------------------|--------------|
| DRAWING NO. D206-667-247 | TITLE CROSSTUBE ASS'Y (206L MID AFT) | REV. A | DART AEROSPACE LTD ENGINEERING ORDER | | D.E.O. NO. D206-667-247-A-1 | SHEET NO. SHEET 1 OF 1 | SCALE NTS |
| DRAWN qp | CHECKED ASS | MFG. APPR. KB | APPROVED JMP | | DE APPR. H | | |
| DATE 11.07.15 | DATE 11.07.20 | DATE 11.07.21 | DATE 11/07/21 | | DATE 11.07.21 | | |

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL

CHANGE:

IS:

| Item | Qty -247 | Part Number | Description |
|------|-------------|-----------------|-------------------------------|
| 9 | A/R | PROSEAL 890 B-2 | SEALANT, AMS-S-8802 CLASS B-2 |

WAS:

| | | | |
|---|-----|----------------|---|
| 9 | A/R | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE) |
|---|-----|----------------|---|

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2892-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
W

Dart Aerospace Ltd

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 14905

PAGE 1 OF 1

CLIENT Dart Aerospace DATE January 30, 2012 TIME AM ☒ PM ☐
ATTENTION Linda L. Lach ACUREN JOB NO. 188-12-20022
ADDRESS 1270 ABEL PEEK ST POWO No. ---
Waverly Park, ON WORK LOCATION same
ACCEPTANCE STD. AS 1417/01-033 REV./DATE 2005
PROJECT F.P.I. on MACHINED Part
ITEM(S) EXAMINED 4 CROSS TUBES

JOB DESCRIPTION --- PROCEDURE NO. LT-1002 REV./DATE 2005 TECHNIQUE NO. LT-1002 REV./DATE 2005
PART NO. SEE RESULTS MATERIAL STEEL / ALUMINUM THICKNESS VARIABLE
SCOPE WET FLUORESCENT LIQUID PENETRANT INSPECTION
CARRIED OUT ON 100% EXTERNAL SURFACE

TEST DETAILS

| | |
|--|--|
| METHOD <input checked="" type="checkbox"/> FLUORESCENT <input type="checkbox"/> VISIBLE | <input checked="" type="checkbox"/> WATER WASH <input type="checkbox"/> SOLVENT REMOVABLE <input type="checkbox"/> POST EMULSIFIED |
| FAMILY BRAND <u>WAGNER</u> | BLACK LIGHT S/N <u>16459</u> <input type="checkbox"/> OUTPUT > 1000 μ W/cm ² <input type="checkbox"/> AMBIENT < 2 fc |
| PENETRANT <u>2467</u> MINIMUM DWELL TIME <u>10</u> MIN. | LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE |
| PENETRANT REMOVER <u>2467</u> MINIMUM DRY TIME <u>>10</u> MIN. | OTHER <u>L43.00</u> |
| DEVELOPER <u>SDS-2</u> MINIMUM DWELL TIME <u>10</u> MIN. | LIGHT METER S/N <u>1078866</u> CAL DUE DATE <u>Feb 27</u> |
| DEVELOPER TYPE <input checked="" type="checkbox"/> NON AQUEOUS <input type="checkbox"/> AQUEOUS <input type="checkbox"/> DRY | <u>2012</u> |

TEST SURFACE

SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☒ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE METAL
SURFACE TEMPERATURE ☐ < -4°C/ 20°F ☐ -4°C/ 20°F TO 10°C/ 50°F ☒ 10°C/ 50°F TO 52°C/ 125°F ☐ > 52°C/ 125°F

RESULTS- ☐ METRIC ☐ IMPERIAL

2 - 20. 78271 - Mount. ✓
1 - W.C. 78466 - CROSS TUBE ✓
1 - W.C. 78465 - CROSS TUBE ✓
1 - W.C. 78470 - CROSS TUBE ✓
1 - W.C. 78467 - CROSS TUBE ✓
x INDICATIONS TO BE CHANGED
8/2/06

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

| | | |
|---|--|----------------------|
| CLIENT REPRESENTATIVE <u>Andrew Sheldon</u> | <u>Andrew Sheldon</u> | DTR # <u>E-038CS</u> |
| TECHNICIAN (SIGNATURE): <u>Mike Hester</u> | <u>Mike Hester</u> | REPORT REVIEWED BY: |
| NAME (PRINT): <u>Mike Hester</u> | 1 ST TECHNICIAN | NAME INITIALS |
| CGSB LEVEL <u>II</u> SNT LEVEL <u>II</u> | CGSB LEVEL <u>---</u> SNT LEVEL <u>---</u> | |
| CGSB REG. No. <u>6606</u> | CGSB REG. No. <u>---</u> | |

WHITE - CLIENT COPY

CANARY - OFFICE COPY

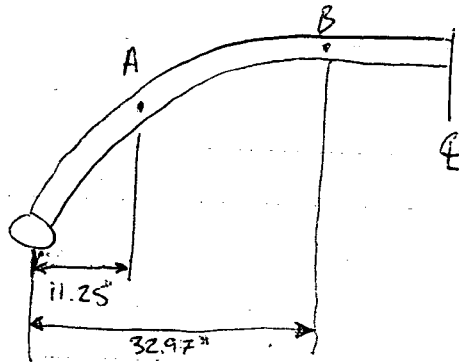
PINK - TECHNICIAN COPY

GOLD - OFFICE COPY

12.01.13

CRUSHING OF D206-667-247

Acceptability of ^{7.3%} 8% CRUSHING AT END OF BEND



Point A: $OD_1 = 2.283$ $OD_2 = 1.973$
 $CRUSHING = (2.283 - 1.973) / (2.283 + 1.973) = 7.3\%$
 $I = 0.435 \text{ in}^4$ FROM AUTOCAD

Point B: $OD = 2.50 \text{ in}$ $ID = 1.80 \text{ in}$
 $I = 1.402 \text{ in}^4$

A: $F = MC/I = P \times 11.25 \times 1.973 / 2 \times 0.435 = 13.52 P$
 B: $F = P \times 32.97 \times 2.50 / 2 \times 1.402 = 29.39 P$

M.S. = $29.39 / 13.52 - 1 = 1.17$

∴ Tube will break at support before area of ^{7.3%} 8% crushing. 8% crushing in area at end of bend is acceptable. UP 12.02.01

CP 12.01.13

5.2 MID-HEIGHT CROSSTUBES

| Item | Qty -107 | Qty -207 | Part Number | Description |
|------|-------------|-------------|---------------|---|
| | X | | D206-667-107 | CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 MID FWD |
| | | X | D206-667-207 | CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 MID AFT |
| 7 | 1 | | D206-667-147 | CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 MID FWD |
| 8 | | 1 | D206-667-247 | CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 MID AFT |
| 10 | *2 | | D2891-1 | SUPPORT |
| 11 | | *2 | D2892-1 | SUPPORT |
| 13 | *4 | | D3595-063-395 | RUBBER CUSHION |
| 14 | | *4 | D3595-063-450 | RUBBER CUSHION |
| 16 | *4 | | MS21920-20 | CLAMP |
| 17 | | *4 | MS21920-22 | CLAMP |
| 19 | 4 | | AN5-32A | BOLT |
| 20 | | 4 | AN5-34A | BOLT |
| 21 | 4 | 4 | MS21042L5 | NUT (OR MS21042-5) |
| 22 | 8 | 8 | NAS1149C0563J | WASHER (OR AN950JD516) |
| 40 | *2 | *2 | D2873-043 | NUT PLATE |
| 41 | *2 | *2 | D2873-045 | NUT PLATE |
| 44 | 10 | | AN5-7A | BOLT |
| 45 | | 10 | AN5-10A | BOLT |
| 46 | 4 | | AN5-30A | BOLT |
| 47 | | 4 | AN5-32A | BOLT |
| 48 | 12 | | AN970-4 | WASHER (OPTIONAL) |
| 50 | 10 | 10 | NAS1149C0563J | WASHER (OR AN960JD516) |

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-147/-247 ASSEMBLIES ABOVE